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EXAMINER

LE, BRIAN Q

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/633,594

Applicant(s)

FUJII ET AL.

Examiner

Brian Q. Le

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **Response to Amendment and Arguments**

1. Applicant's amendment filed February 26, 2007, has been entered and made of record.
2. Applicant's arguments with regard to claims 1-7 have been fully considered, but are not considered persuasive because of the following reasons:

Regarding claim 1, the Applicant argues (pages 8-9 of the Remarks) that Nagasaki et al. U.S. Patent No. 6,278,797 ("Nagasaki") does not teach or suggest the correcting of inspection windows so as to appropriately correspond to the parts on a board to be actually inspected. The Examiner respectfully disagrees. Nagasaki discloses a concept of preparing a land size to reflect area or dimension of a land of a board (that is correcting of inspection window) (column 3, lines 55-61) so as to appropriately correspond to the parts on a board to be actually inspected (to prepare for inspection area of the land of the board) (column 3, lines 55-61 and column 4, lines 4-41). The Applicant further brought the teaching of Nagasaki column 24, lines 49-52 to show that Nagasaki is teaching away for this concept by cited that "the set of position of the group of position tolerance defining window PW on the inspection surface is the same so long as the land-attached circuit board 1 is of the same kind." The Examiner respectfully disagrees. This statement does not show that Nagasaki teaches away from the discussed concept. This statement is concerning about the tolerance defining windows to circuit board of the same kind so that the corrected window and associated tolerance can be apply to the same kind of circuit board.

Therefore, Nagasaki teaches the amended limitation "based on the detection result, automatically correcting the set data for setting an inspection window included in the inspection data, so that the inspection window is adapted for inspection of the board".

The Examiner believes that all the arguments of the Applicant have been properly addressed and explained. Thus, the rejections of all of the claims are maintained.

*Claim Rejections - 35 USC § 112*

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 10, 13 and 15-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Regarding claims 10 and 13, there is no support found in the original disclosure to show the limitation “the image input means images **a second board on which parts are mounted thereon**, wherein, based on the imaging of the second model of the board, **the registration means only registers the inspection data file after making a determination that the corrected inspection data is proper**” (emphasis added). Claim 13 is rejected as similar to the discussion above.

Regarding claim 15-16, the support for the limitation “wherein the inspection data is automatically corrected when the image area corresponds to each land on the model of the board has been **either increased or decreased with respect to the read inspection data**” (emphasis added).

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The Applicant is required to show the exact support (page number and line number) in the original disclosure for the discussed issues above.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-8, 10-11, and 13-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Nagasaki et al. U.S. Patent No. 6,278,797.

Regarding claim 1, Nagasaki teaches a method of producing inspection data (method produces inspection information) (column 5, lines 10-13) for inspecting (column 1, lines 7-10) a parts-mounted board (land-attached circuit board) (column 15, line 17 and FIG. 1A) by image processing (column 23, lines 43-50), comprising:

reading inspection data corresponding to each part (prepare inspection data for each land for comparison) (column 3, line 55 to column 4, line 3) on a board (FIG. 1A) constituting an object of inspection from a parts library produced in advance (image of a land can be prepared in advance) (column 23, lines 49-51);

setting the inspection data at the mounting position of the part (land region fixing means to set/prepare mounting position data such as height of the lands for inspection) (column 5, lines 4-16 and column 23, lines 53-55);

detecting an image area corresponding to each land on an image picked up from a model of the board constituting the object of inspection (input images of the land object to compare with master image for inspection) (column 23, lines 43-65); and

based on the detection result (base on result to define whether the inspection if good or defective by a defined tolerance) (column 24, lines 20-53), automatically (the system is constructed to calculate the window on its own) (column 6, lines 50-55) correcting the set data (concept of preparing a land size to reflect area or dimension of a land of a board) (column 3, lines 55-61) (column 7, lines 10-12 and FIG. 12A-FIG. 12B) for setting an inspection window (column 6, lines 50-57) included the said inspection data so that the inspection window is adapted for inspection of the board (to prepare for inspection area of the land of the board) (column 3, lines 55-61 and column 4, lines 4-41) (column 21, lines 4-25).

Regarding claim 2, Nagasaki also teaches an inspection data producing method (as discussed in claim 1) wherein the step of detecting the image area corresponding to said the land (column 23, lines 45-50), comprises:

retrieving the position of the land edges with reference (position data  $X_{ABS}$ ,  $Y_{INC}$  obtained for each scanning point of the surface of land would include the position of the land edges since the laser beam scans the entire surface of land) (column 4, lines 35-38; column 18, lines 46-49; column 19, lines 42-45 and FIG. 12B) to a solder (column 14, lines 33-40) inspection window (FIG. 12B) based on the set data before correction on the image of the model (base on inspection information before inspection and thus correction of image) (FIG. 25, S201).

Referring to claim 3, Nagasaki further teaches an inspection data producing method (as discussed in claim 1), wherein, in accordance with the correction of the set data (FIG. 5,

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element 94b and 94c and FIG. 25, S202, S203, S204) of the inspection window (FIG. 43, P10), inspection reference data corresponding to the corrected inspection window is corrected (FIG. 10 and column 21, lines 4-25).

Regarding claim 4, Nagasaki discloses an inspection data producing method (as disclosed in claim 1), wherein, using the corrected inspection data for a predetermined part (predetermined value/predetermined condition of part of each land for inspection purpose) (column 5, lines 7-8 and column 8, line 35) on the board (standard data as predetermined part on a land/board) (FIG. 9), the inspection data for the parts of the same type as the predetermined part is corrected (corrected/calculated the predetermined part/standard data/properties of land part) (FIG. 9; FIG. 19; column 24, lines 50-59 and column 26, lines 1-14).

For claim 5, Nagasaki also discloses an inspection data producing method (as discussed in claim 1), wherein the inspection data shared by the parts (standard data which are use for common inspection purpose of land such as land area, land diameter ...etc) (FIG. 9) is produced using the inspection data corrected for the same type of parts (corrected/calculated the standard/predetermined part/standard data/properties which are the same type of parts in inspecting land) (FIG. 9; FIG. 19; column 24, lines 50-59 and column 26, lines 1-14) on the board, and the inspection data for each part is rewritten (storing is writing in a memory, therefore for every time that storing is done after judgement, it is rewriting the data to the memory) into the common inspection data (storing standard inspecting data/same type of parts of land) (column 27, line 60 to column 28, line 8).

Referring to claim 6, Nagasaki further discloses an inspection data producing method (as discussed in claim 1), further comprising the step of:

rewriting the parts library or producing a new parts library (corrected data wherein producing new parameters for inspection if the standard inspection is not adequate for inspect processing) (FIG. 10; FIG. 25, S202, S203, S204) for a predetermined part using the corrected inspection data (column 21, lines 4-25 and column 31, lines 52-54).

Regarding claim 7, as discussed in claim 1 regarding the correction means based on the detection result, Nagasaki further teaches a board inspection apparatus (column 1, lines 7-12) comprising:

image input means (CCD camera) (column 34, line 17) for inputting an image picked up of a board (column 23, lines 43-47);

data file producing means (FIG. 19) for producing an inspection data file required for inspection of a board to be inspected (table of inspection data which is required for board/land inspection) (column 28, lines 10-15), by reading the inspection data corresponding to each part from a parts library (memory that stores inspection data commonly such as master image)(column 31, lines 48-52) and setting the inspection data on a mounting position of the part (land region fixing means to set/prepare mounting position data such as height of the lands for inspection) (column 5, lines 4-16 and column 23, lines 53-55);

land inspection means for receiving an input model image of a corresponding board (the process of retrieving master image) (column 23, lines 50-65) after complete production of the inspection data file and detecting an image area corresponding to a land on the image (after the generation of standard data of master image of each corresponding land) (column 3, lines 55 to column 4, line 3; column 4, lines 23-37; and column 23, lines 43-50); and



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registration means for registering in a memory (storing data to a memory) (column 19, lines 24-30) the inspection data file including the corrected set data (store corrected data) (column 19, lines 24-26).

Regarding claim 8, Nagasaki teaches a board inspecting apparatus wherein the memory corresponds to the parts library (FIG. 19 and column 19, lines 24-32).

For claim 10, Nagasaki teaches a board inspecting apparatus wherein, when the inspection window has been corrected using an image of the board in which no parts are mounted thereon (correct using master image on the existing regions of land) (column 4, lines 21-41 and column 23, lines 43-67),

The image input means images a second board on which parts are mounted thereon (processing image of each land would include image input a second board/picture elements which parts are mounted) (column 21, lines 15-25),

Wherein, based on the imaging the second model of the board, the registration means only registers the inspection data file after making a determination that the corrected inspection data is proper (The process of checking whether the coordinates, geometric center of gravity or area is proper to a certain threshold value) (column 22, lines 46-67).

For claim 11, Nagasaki also teaches a board inspecting apparatus wherein the inspection window is corrected using the image picked up from the model of the board on which no parts have been mounted (correct using master image on the existing regions of land) (column 4, lines 21-41 and column 23, lines 43-67).

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For claims 13-14, please refer back to claims 10-11 respectively for further teachings and explanations.

Regarding claims 15-16, Nagasaki teaches an inspection data producing method wherein the inspection data is automatically corrected (calculation by the system) when the image area corresponds to each land on the model of the board has been either increased or decreased with respect to the read inspection data (column 23, lines 43-67).

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagasaki et al. U.S. Patent No. 6,278,797.

Regarding claim 9, Nagasaki teaches a board inspecting apparatus (as discussed in claim 7) wherein the inspection data includes luminance (reflectance) and brightness values of color light shined on the part on mounted on the board (column 3, lines 17-38). Nagasaki does not explicitly teach that color light can be Red, Green and Blue. The Examiner take an Office Notice that it is obvious for color light to be described in an well known color system such as Red, Green, and Blue (RGB) color system. Thus it would have been obvious for one skilled in

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the art to use RGB color system as a modification to Nagasaki to describe luminance and brightness values of color light shined on the part when mounted on the board.

For claim 12, please refer back to claim 9 for further teachings and explanations.

***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

***Contact Information***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Q. Le whose telephone number is 571-272-7424. The examiner can normally be reached on 8:30 A.M - 5:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mathew Bella can be reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Brian Le  
May 7, 2007